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EXAMINER	
OSTERHOUT, BENJAMIN LEE	
ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,217	RADEV, ATANAS IVANOV	
	Examiner	Art Unit	
	BENJAMIN OSTERHOUT	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20080819*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over WIPO Patent Application Publication No. WO99/20824 to Radev et al. in view of WIPO Patent Application Publication No. WO96/37314 to Bux et al. in view of U.S. Patent No. 6,612,137 to Smulowitz in view of Japanese Patent Application Publication No. 2001276484 to Ando et al. in view of US Patent Application Publication No. 20050008861 in view of Yadav et al.

Regarding claim 1, Radev et al. teaches a method of cleaning soiled textile materials (page 2, ll. 27-29) comprising subjecting the textiles to a continuous supply of vibrations of an audible frequency of 6.5 to 8khz for 30 to 50 minutes in a washing water

environment (page 3, ll. 5-9). Radev et al. does not teach that the frequency is between 8.5 to 32 kHz. However, Applicant admits and Bux et al. teaches a method of cleaning textile materials wherein a sonic frequency of 15 to 25 kHz is applied to the textile materials (see specification of the current application page 2, paragraph 3, ll. 1-7). Therefore it would have been obvious from the prior art references to wash the textile materials in a washing water environment for 40 to 50 minutes at a sonic frequency of 15 to 25 kHz. There exists an overlap of ranges, a prima facie case of obviousness exists wherein the claimed ranges disclosed by the prior art overlap or lie within ranges disclosed by the prior art and a range can be disclosed in multiple prior art references instead of a single prior art reference. See MPEP 2144.05, I. Radev et al. in view of Bux et al. does not teach that the textile materials are subjected to a constant magnetic field with intensity of 10-50 Gs or that the water solution contains silver particles with 10-100mm size generating a silver ion concentration in a range of 1.10^{-7} to 2.10^{-8} g/l.

Smulowitz teaches a method of using permanent magnets on the interior or exterior of a washing machine in order to elevate the normal cleaning ability of water via increasing solvency by magnetic influence to clean laundry without the use of laundry detergents (col. 2, ll. 54-62). Therefore it would obvious to one of ordinary skill in the art at the time of the invention to modify the method of Radev et al. in view of Bux et al. with the method of using magnets and magnetic influence to increase the solvency capability of water as in Smulowitz in order to clean laundry without the use of detergents. Radev et al. in view of Bux et al. in view of Smulowitz does not teach an intensity of 10-50 Gs of the magnetic field, however, the intensity of the magnetic field

has not been shown or recognized in the prior art as a result-effective variable and thus said range is not considered to be inventive. See MPEP 2144.05 II, B. Radev et al. in view of Bux et al. in view of Smulowitz does not teach the use of silver particles with 10-100mm size generating a silver ion concentration in a range of 1.10^{-7} to 2.10^{-8} g/l.

Ando et al. teaches a method of washing clothes using a silver ion adding unit which adds silver ions to the cleaning water in a concentration of 3 to 50 ppb (parts per billion, 5.0^{-5} to 3.0^{-6} g/l) in order to render the laundry antibacterial (machine translation, paragraph 5, ll. 1-7 and paragraph 13, ll. 1-6). Ando et al. does not teach that the silver ion concentration is in the range of 1.10^{-7} to 2.10^{-8} g/l, however, where the general conditions of a claim are disclosed in the prior art , it is not inventive to discover the optimum or workable ranges by routine experimentation. See MPEP 2144.05 II, A. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the washing method of Radev et al. in view of Bux et al. in view of Smulowitz with the use of silver ions as in Ando et al. in order to render the laundry to be washed antibacterial. Radev et al. in view of Bux et al. in view of Smulowitz in view of Ando et al. does not teach that the mean particle size is between 10 to 100nm in size.

Yadav et al. teaches the use of nano-sized silver particles for anti-microbial applications wherein the nanosize is at least 10 percent faster working than micron sized particles (paragraph 100, ll. 1-7, wherein nanosize is considered to be particles less than 250nm, paragraphs 22-23). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the washing method of Radev et al. in view of Bux et al. in view of Smulowitz in view of Ando et al. with

nanosized silver particles as in Yadav et al. in order for the anti-microbial properties of the silver particles to be even more effective and faster working than particles of a larger size.

4. Claims 2-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over WIPO Patent Application Publication No. WO99/20824 to Radev et al. in view of U.S. Patent No. 6,612,137 to Smulowitz in view of Japanese Patent Application Publication No. 2001276484 to Ando et al. in view of US Patent Application Publication No. 20050008861 in view of Yadav et al..

Regarding claims 2 and 10, Radev et al. teaches a device for washing textile materials comprising an electric power source, with an active element (transmitter/activator) with a piezo-ceramic element, a generator of supersonic vibrations, and the active element (transmitter/activator) is oval-shaped (page 3, ll. 10-19). Radev et al. does not teach that the piezo-ceramic material is saturated with silver particles or that the body of the active element is surrounded by magnets.

Smulowitz teaches the use of magnets in the interior or a washing machine in order to elevate the normal cleaning ability of water via increasing the solvency by magnetic influence to clean laundry free and independent of laundry detergents. Therefore it would have been obvious to modify the device of Radev et al. with the use of magnets and magnetic influence to increase the solvency capability of water as in Smulowitz in order to clean laundry without the use of detergents. Radev et al. in view of Smulowitz does not teach that the magnets are placed around the transmitter. However, the placing of the magnets around the transmitter is a matter of obvious

engineering design choice. The magnets will still increase the solvency of water and the transmitter will still transmit the sonic frequency, amounting to still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04, VI, C. Radev et al. in view of Smulowitz does not teach that the piezo-ceramic material is saturated with silver particles.

Ando et al. teaches the use of a silver ion adding unit in a washing machine which adds silver ions to the cleaning water in order to render the laundry antibacterial (machine translation, paragraph 5, ll. 1-7). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Radev et al. in view of Smulowitz with the silver ion adding unit of Ando et al. in order to render the laundry antibacterial. Radev et al. in view of Smulowitz in view of Ando et al. does not teach that the piezo-ceramic material is saturated with silver particles. However, the making integral of the silver ions and the piezo-ceramic transmitter is a matter of obvious engineering choice. The silver ions will continue to render the laundry antibacterial and the piezo-ceramic transmitter will continue to transmit the sonic frequency, amounting to still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04 V, B. Radev et al. in view of Smulowitz in view of Ando et al. does not teach that the silver is in the quantity of 0.2-0.5g or that the mean particle size is between 10 to 100nm in size.

The initial amount of the silver in the quantity of 0.2-0.5g has not been shown or recognized in the prior art as a result-effective variable and thus said range is not considered to be inventive. See MPEP 2144.05 II, B.

Yadav et al. teaches the use of nano-sized silver particles for anti-microbial applications wherein the nanosize is at least 10 percent faster working than micron sized particles (paragraph 100, ll. 1-7, wherein nanosize is considered to be particles less than 250nm, paragraphs 22-23). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the washing method of Radev et al. in view of Smulowitz in view of Ando et al. with nanosized silver particles as in Yadav et al. in order for the anti-microbial properties of the silver particles to be even more effective and faster working than particles of a larger size.

Regarding claim 3, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev teaches that the piezo-ceramical element is the shape of a cylinder (Fig. 3 and 4, part 7).

Regarding claim 4, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. does not teach that the transmitter comprises two piezo-ceramical elements placed apart from each other. Although Radev et al. does not specifically disclose two piezo-ceramical elements, the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. See MPEP 2144.04 VI, B.

Regarding claim 5, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev et al. in view of Smulowitz teaches the use of magnets placed around the transmitter as above in claim 2. Smulowitz does use at least four magnets as shown Fig 3, part 24. However, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. does not teach the use of four magnets equidistant and forming a circle around the transmitter. However, the use of four magnets equidistant and forming a circle around the transmitter is a matter of obvious matter of design choice. The magnets will still increase the solvency of water and the transmitter will still transmit the sonic frequency, amounting to still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04, VI, C.

Regarding claim 6, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev et al. in view of Smulowitz teaches the use of magnets placed around the transmitter as above in claim 2. However, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. does not teach an even number of magnets placed around the piezo-ceramical element in non-circular form. However, the use of an even number of magnets are placed around the piezo-ceramical element in non-circular form around the transmitter is a matter of obvious matter of design choice. The magnets will still increase the solvency of water and the transmitter will still transmit the sonic frequency, amounting to

still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04, VI, C.

Regarding claim 7, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. does not teach the poles of the magnets are placed perpendicular to the plane that lays the piezo-ceramical element. However, the placing of the poles of the magnets perpendicular to the plane that lays the piezo-ceramical element is a matter of obvious design choice. The magnets will still increase the solvency of water and the transmitter will still transmit the sonic frequency, amounting to still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04, VI, C.

Regarding claim 8, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. do not teach that the total surface of the magnet poles is equal or smaller than the surface of the piezo-ceramical element. However, the change in size/proportion of the magnet poles in relation to the piezo-ceramical element is not unpredictable; the magnets will still increase the solvency of water and the transmitter will still transmit the sonic frequency, amounting to still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04 IV, A.

Regarding claim 9, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev teaches that the piezo-ceramical element is the shape of a cylinder (Fig. 3 and 4, part 7). Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. do not teach that the diameter and height ratio of the piezo-ceramical element is 5:1. However, the change in size/proportion of the height to dieamter of the the piezo-ceramical element is not unpredictable; the transmitter will still transmit the sonic frequency, amounting to still the same predictable result that the clothes will be cleaner, faster. See MPEP 2144.04 IV, A.

Regarding claim 11, Radev et al. in view of Smulowitz in view of Ando et al. in view of Yadav et al. are relied upon as above in claim 2. Radev et al. teaches that the generator is controllable and that excitation is compulsory (page 3, ll. 14-19).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN OSTERHOUT whose telephone number is (571)270-7379. The examiner can normally be reached on Monday-Thursday 8:30am-3:30pm.

6. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph L. Perrin/
Joseph L. Perrin, Ph.D.
Primary Examiner
Art Unit 1792

/BLO/

Benjamin L. Osterhout
06 May 2009